IN THE CLAIMS:

1. (currently amended) A method of forming a trench capacitor in a substrate
comprising the steps of:
etching a trench having substantially vertical sidewalls;
depositing by a spin-on process a thermally stable filler material having a molecular weight of greater than 1,000 in the trench;
annealing the filler material in an oxidizing ambient;
recessing the filler material down to a capacitor top level;
forming insulating spacers on the trench sidewalls above the capacitor top level;
stripping the filler material;
doping the trench sidewalls below the spacers; and
depositing a conductive electrode within the trench.

2. (original) A method according to claim 1 in which the thermally stable filler material is deposited in direct contact with the sidewalls.

3. (Currently amended) A method of forming a trench capacitor in a substrate comprising the steps of:
etching a trench having substantially vertical sidewalls;
depositing a thermally stable filler material in the trench;
annealing the filler material in an oxidizing ambient;

recessing the filler material down to a capacitor top level;

forming insulating spacers on the trench sidewalls above the capacitor top level;

stripping the filler material;

doping the trench sidewalls below the spacers; and

depositing a conductive electrode within the trench

~~A method according to claim 1~~, in which the step of annealing the filler material is performed at a temperature of less than 500C; and the step of forming the spacers is performed by atomic layer deposition.

4. (currently amended) A method according to claim 3, in which the step of ~~heating~~ annealing the filler material is performed in-situ on a spin-on track during the step of trench filling with a thermally stable filler material.

5. (original) A method according to claim 1, in which the step of forming the spacers is performed by depositing high-k material.

6. (original) A method according to claim 2, in which the step of forming the spacers is performed by depositing high-k material.

7. (original) A method according to claim 3, in which the step of forming the spacers is performed by depositing high-k material.

8. (currently amended) A method of forming a trench capacitor in a substrate
comprising the steps of:
etching a trench having substantially vertical sidewalls;
depositing a thermally stable filler material in the trench;
annealing the filler material in an oxidizing ambient;
recessing the filler material down to a capacitor top level;
forming insulating spacers on the trench sidewalls above the capacitor top level;
stripping the filler material;
doping the trench sidewalls below the spacers; and
depositing a conductive electrode within the trench, ~~A method according to claim 5,~~ in which the step of forming the spacers is performed by depositing a high-k material selected from the group comprising Al2O3, HfO2, ZrO2 and La2O3 and their silicates.

9. (currently amended) A method of forming a trench capacitor in a substrate
comprising the steps of:
etching a trench having substantially vertical sidewalls;
depositing a thermally stable filler material in the trench;
annealing the filler material in an oxidizing ambient;
recessing the filler material down to a capacitor top level;
forming insulating spacers on the trench sidewalls above the capacitor top level;

stripping the filler material;

doping the trench sidewalls below the spacers; and

depositing a conductive electrode within the trench, ~~A method according to claim 6,~~ in which the step of forming the spacers is performed by depositing a high-k material selected from the group comprising Al2O3, HfO2, ZrO2 and La2O3 and their silicates.

10. (original) A method according to claim 7, in which the step of forming the spacers is performed by depositing a material selected from the group comprising Al2O3, HfO2, ZrO2 and La2O3 and their silicates.

11. (original) A method according to claim 1, in which a step of performing a bottle etch precedes the step of depositing a thermally stable filling material.

12. (currently amended) A method according to claim 1, in which the step of ~~heating~~ annealing the filler material is performed at a temperature of less than 800C and the step of forming the spacers is performed by low pressure deposition of nitride or oxide at a temperature of less than 800C.

13. (original) A method according to claim 12, in which a step of performing a bottle etch precedes the step of depositing a thermally stable filling material.

14. (currently amended) A method of forming an integrated circuit

containing a DRAM array comprising the steps of:

a) forming a capacitor by:

etching a trench having substantially vertical sidewalls;

depositing by a spin-on process a thermally stable filler material having a molecular weight greater than 1,000 in the trenches;

heating the filler material in an oxidizing ambient;

recessing the filler material down to a capacitor top level;

forming spacers on the trench sidewalls;

stripping the filler material;

doping the trench sidewalls below the spacers; and

depositing a conductive electrode within the trench;

b) forming a transistor connecting a bitline to the conductive electrode; and

completing the integrated circuit.

15. (original) A method according to claim 14, in which the thermally stable filler material is deposited in direct contact with the sidewalls.

16. (currently amended) A method of forming an integrated circuit containing a DRAM array comprising the steps of:

a) forming a capacitor by:

etching a trench having substantially vertical sidewalls;

depositing a thermally stable filler material in the trenches;

heating the filler material in an oxidizing ambient;

recessing the filler material down to a capacitor top level;

forming spacers on the trench sidewalls;

stripping the filler material;

doping the trench sidewalls below the spacers; and

depositing a conductive electrode within the trench;

b) forming a transistor connecting a bitline to the conductive electrode; and

completing the integrated circuit ~~A method according to claim 14~~, in which the step of annealing the filler material is performed at a temperature of less than 500C; and the step of forming the spacers is performed by atomic layer deposition.

17. (currently amended) A method according to claim 16, in which the step of heating the filler material is performed in-situ on a spin-on track during the step of trench filling with a thermally stable filling material.

18. (original) A method according to claim 16, in which the step of forming the spacers is performed by depositing high-k material.

19. (original) A method according to claim 17, in which the step of forming the spacers is performed by depositing high-k material.

20. (original) A method according to claim 19, in which the step of forming the spacers is performed by depositing a material selected from the group comprising Al2O3, HfO2, ZrO2 and La2O3 and their silicates.